

We claim:

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1. A polyethylene composition comprising a melt blend of a high density polyethylene resin and at least one resin selected from the group consisting of linear low density polyethylene resins, linear medium density polyethylene resins, and mixtures thereof, said resins being present in the melt-blended polyethylene composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.
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2. The composition of claim 1, wherein the resins are independently selected from the group consisting of virgin, recycled, scrap and wide specification resins, and mixtures thereof.
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3. The composition of claim 1, wherein the at least one resin has a melt flow index of about 0.1 to about 1.5.
4. The composition of claim 1, wherein the at least one resin has a density of about 0.920 to about 0.940.
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5. The composition of claim 1, wherein the high density polyethylene resin has a melt flow index of about 0.01 to about 1.5.
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6. The composition of claim 1, wherein the high density polyethylene resin is selected from the group consisting of a unimodal resin, a bimodal resin, a multimodal resin, and mixtures thereof.
7. The composition of claim 1, wherein the high density polyethylene resin is present in an amount of about 50 to about 95 percent by weight.
8. The composition of claim 1, wherein the flow rate ratio of the melt-blended composition is about 80 to about 130.
9. The composition of claim 1, wherein the flow rate ratio of the resins is about 20 to about 200.

- 5 12. The composition of claim 1, wherein the melt flow index of the melt-blended composition is about 0.15 to about 0.35.
13. The composition of claim 12, wherein the melt flow index of the melt-blended composition is about 0.2 to about 0.3.
14. The composition of claim 1, wherein the density of the melt-blended composition is 0.945 to 0.955 and the melt flow index is about 0.1 to 0.4.
15. The composition of claim 1, wherein the high density polyethylene resin is selected from the group consisting of a high molecular weight high density polyethylene resin having a melt flow index of about 0.01 to about 0.2, a homopolymer high density polyethylene resin having a melt flow index of about 0.1 to about 1.5, and mixtures thereof.
16. The composition of claim 15, wherein the high molecular weight high density polyethylene resin has a density of about 0.941 to about 0.958 g/cm³.
17. The composition of claim 15, wherein the homopolymer high density polyethylene resin has a density of about 0.957 to about 0.970 g/cm³.
18. The composition of claim 15, wherein the high density polyethylene resins are independently selected from the group consisting of a unimodal resin, a bimodal resin, a multimodal resin, and mixtures thereof.
19. The composition of claim 15, wherein the high density polyethylene resins are independently selected from the group consisting of virgin, recycled, scrap and wide specification resins, and mixtures thereof.

20. A polyethylene composition comprising a melt blend of/
- (a) a high density polyethylene resin selected from the group consisting of a high molecular weight high density polyethylene resin having a density of about 0.941 to about 0.958 g/cm³ and a melt flow index of about 0.01 to about 0.2, a homopolymer high density polyethylene resin having a density of about 0.957 to about 0.970 g/cm³ and a melt flow index of about 0.1 to about 1.5, and mixtures thereof; and
- (b) at least one additional polyethylene resin having a melt flow index of about 0.1 to about 1.5 and a density of about 0.920 to about 0.940 g/cm³,
said polyethylene resins being present in the melt-blended composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.
21. The composition of claim 20, wherein the high density polyethylene resin is present in an amount of about 50 to about 95 percent by weight.
22. The composition of claim 20, wherein the resins are independently selected from the group consisting of virgin, recycled, scrap and wide specification resins, and mixtures thereof.
23. An extruded, molded or formed plastic article comprising a melt blended polyethylene composition that comprises a melt blend of a high density polyethylene resin and at least one resin selected from the group consisting of linear low density polyethylene resins, linear medium density polyethylene resins, and mixtures thereof, said resins being present in the melt-blended polyethylene composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.
24. The article of claim 23, wherein the article is selected from the group consisting of pipe, pipe fittings, wire insulation material, cable insulation materials, films, sheets, and environmental chambers.
25. The article of claim 23, wherein the resins are independently selected from the group consisting of virgin, scrap, recycled, and wide specification resins, and mixtures thereof.

26. An extruded, molded or formed plastic article comprising a melt blended polyethylene composition that comprises a high density polyethylene resin selected from the group consisting of a high molecular weight high density polyethylene resin having a density of about 0.941 to about 0.958 g/cm³ and a melt flow index of about 0.01 to about 0.2, a homopolymer high density polyethylene resin having a density of about 0.957 to about 0.970 g/cm³ and a melt flow index of about 0.1 to about 1.5, and mixtures thereof; and at least one additional polyethylene resin having a melt flow index of about 0.1 to about 1.5 and a density of about 0.920 to about 0.940 g/cm³, said polyethylene resins being present in the melt-blended composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.

27. The article of claim 26, wherein the article is selected from the group consisting of pipe, pipe fittings, wire insulation material, cable insulation materials, films, sheets, and environmental chambers.

28. The article of claim 26, wherein the resins are independently selected from the group consisting of virgin, scrap, recycled, and wide specification resins, and mixtures thereof.

29. An extruded, molded or formed pipe and/or pipe fitting comprising a melt blended polyethylene composition that comprises a melt blend of a high density polyethylene resin and at least one resin selected from the group consisting of linear low density polyethylene resins, linear medium density polyethylene resins, and mixtures thereof, said resins being present in the melt-blended polyethylene composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.

30. The pipe and/or pipe fitting of claim 29, wherein the resins are independently selected from the group consisting of virgin, scrap, recycled, and wide specification resins, and mixtures thereof.

31. The pipe and/or pipe fitting of claim 29, wherein the composition further comprises about 1 to about 5 percent by weight carbon black.

32. The pipe and/or pipe fitting of claim 29, wherein the pipe is selected from the group consisting of profile pipe, corrugated pipe, and combinations thereof.
33. The pipe and/or pipe fitting of claim 29, having a density of 0.945 to 0.955, a melt flow index of about 0.1 to 0.4, a minimum flexural modulus of 110,000 psi and a minimum tensile strength of 3,000 psi.
34. The pipe and/or pipe fitting of claim 33, wherein the pipe is selected from the group consisting of profile pipe, corrugated pipe, and combinations thereof.
35. An extruded, molded or formed pipe and/or pipe fitting comprising a melt blended polyethylene composition that comprises a high density polyethylene resin selected from the group consisting of a high molecular weight high density polyethylene resin having a density of about 0.941 to about 0.958 g/cm³ and a melt flow index of about 0.01 to about 0.2, a homopolymer high density polyethylene resin having a density of about 0.957 to about 0.970 g/cm³ and a melt flow index of about 0.1 to about 1.5, and mixtures thereof; and at least one additional polyethylene resin having a melt flow index of about 0.1 to about 1.5 and a density of about 0.920 to about 0.940 g/cm³, said polyethylene resins being present in the melt-blended composition in amounts relative to one another such that the composition has a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.
36. The pipe and/or pipe fitting of claim 35, wherein the resins are independently selected from the group consisting of virgin, scrap, recycled, and wide specification resins, and mixtures thereof.
37. The pipe and/or pipe fitting of claim 35, wherein the composition further comprises about 1 to about 5 percent by weight carbon black.
38. The pipe and/or pipe fitting of claim 35, wherein the pipe is selected from the group consisting of profile pipe, corrugated pipe, and combinations thereof.
39. The pipe and/or pipe fitting of claim 35, having a density of 0.945 to 0.955, a melt flow index of about 0.1 to 0.4, a minimum flexural modulus of 110,000 psi and a minimum tensile strength of 3,000 psi.

40. The pipe and/or pipe fitting of claim 39, wherein the pipe is selected from the group consisting of profile pipe, corrugated pipe, and combinations thereof.

41. A method for producing a polyethylene composition, comprising melt blending together a sufficient amount of a high density polyethylene resin and a sufficient amount of at least one additional resin selected from the group consisting of linear low density polyethylene resins, linear medium density polyethylene resins, and mixtures thereof, to produce a melt-blended composition having a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.

42. The method of claim 41, wherein the resins are independently selected from the group consisting of virgin, recycled, scrap and wide specification resins, and mixtures thereof.

43. The method of claim 41, wherein the high density polyethylene resin is present in an amount of about 50 to about 95 percent by weight.

44. A method for producing a polyethylene composition, comprising melt blending together a sufficient amount of a high density polyethylene resin selected from the group consisting of a high molecular weight high density polyethylene resin having a density of about 0.941 to about 0.958 g/cm³ and a melt flow index of about 0.01 to about 0.2, a homopolymer high density polyethylene resin having a density of about 0.957 to about 0.970 g/cm³ and a melt flow index of about 0.1 to about 1.5, and mixtures thereof; and a sufficient amount of at least one additional polyethylene resin having a melt flow index of about 0.1 to about 1.5 and a density of about 0.920 to about 0.940 g/cm³, to produce a melt-blended composition having a density of about 0.945 to about 0.960 g/cm³, a melt flow index of about 0.1 to about 0.4, and a stress crack resistance of at least 24 hours.

45. The method of claim 44, wherein the resins are independently selected from the group consisting of virgin, recycled, scrap and wide specification resins, and mixtures thereof.

46. The method of claim 44, wherein the high density polyethylene resin is present in an amount of about 50 to about 95 percent by weight.